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EXAMINER
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HESELTIME, RYAN J

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 12/04/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/621,553

Applicant(s)

OKAMOTO ET AL.

Examiner

Ryan J Hesseltine

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-3 and 6-9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 6,414,749 to Okamoto et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-3 of the instant application are broader versions of claims 1 and 6 of the aforementioned patent, claims 6 and 7 of the instant application are broader versions of claim 7 of the patent, and claims 8 and 9 of the instant application are broader versions of claims 2-5 of the patent.

### ***Claim Objections***

4. Claims 21 and 23 are objected to because of the following informalities: claim 21 states that said prism includes a convex reflecting surface whereas page 23, line 2-6 states that the

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reflection surface 23 (Figure 19) is shaped into a concave facing the luminous flux L; and claim 23 states that a toric lens is mounted on the emission surface, which has not been found in the specification. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Caulfield et al. (USPN 3,716,301, previously cited), hereafter Caulfield.

7. Regarding claim 1, Caulfield discloses an irregular pattern (fingerprint) reader comprising: a prism (Figure 6, element 38) including a detection surface (top) on which a subject (finger) to be detected having an irregular pattern is put, and a planar incident surface (left side) having a first angle of inclination relative to said detection surface, said prism emitting emission light (right side) reflected from said detection surface and corresponding to incident light incident upon said incident surface (column 8, line 32-58); a first optical system (35-37) including a light source (35), light from the light source being incident on said incident surface of said prism, the light having an optical axis substantially parallel to said detection surface where the light is incident on said incident surface (Figure 6); and a second optical system (39-43) for transmitting the emission light emitted from said prism to an image pick-up device (42, 43; column 9, line 11-27).

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8. Regarding claim 2, Caulfield discloses an irregular pattern reader wherein said prism (Figure 6, element 38) has an emission surface (right side) from which the emission light is emitted and the emission light is emitted at said emission surface substantially parallel to said detection surface (top side; column 8, line 62-column 9, line 27).

9. Regarding claim 3, Caulfield discloses an irregular pattern reader wherein said prism (Figure 6, element 38) includes a planar emission surface (right side) having a second angle of inclination relative to said detection surface (top side).

10. Regarding claim 9, Caulfield discloses an irregular pattern reader wherein said prism includes luminous flux converging means (lens 39) for converging the emission light on the image pick-up device (42, 43, Figure 6; column 8, line 32-40).

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 4, 5, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield as applied to claims 1 and 2 above, and further in view of Metz et al. (USPN 5,974,162, previously cited), hereafter Metz.

13. Regarding claim 4, Caulfield does not disclose that the emission light is emitted from said prism in a direction opposite to the incident light. Metz discloses a device for forming and detecting fingerprint images including a prism (light transmitting substrate 21 in figure 3, 12 in figure 4) wherein emission light (25, figure 3; 15, figure 4) is emitted in a direction opposite to

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the incident light (from light source 20, figure 3; 10, figure 4; column 9, line 51-column 10, line 11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to cause the emission light to be emitted from a prism in a direction opposite to the incident light as taught by Metz in order to provide a thin, ultra-compact device (column 4, line 17-19).

14. Regarding claim 5, Caulfield does not disclose that the prism includes a reflection surface having a second angle of inclination relative to said detection surface. Metz discloses that said prism has a reflection surface (reflection-type volume hologram 23, figure 3; 13, figure 4) having an angle of inclination (parallel) relative to said detection surface, and light from said detection surface diverted at said reflection surface is emitted (after being reflected again by the detection surface) from said prism through said incident surface as the emission light (25, figure 3; 15, figure 4; column 10, line 11-25 and line 42-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a prism having a reflective surface as taught by Metz in order to make the device more compact so as to fit within a thin package (column 4, line 17-19).

15. Regarding claim 10, Metz discloses an irregular pattern reader including an image pick-up device (27, Figure 3; 17, Figure 4), wherein said prism includes a reflection surface for reflecting the light reflected from said detection surface (see above discussion of claim 5) and a lens portion (26, figure 3; 15, figure 4) for receiving light reflected from said reflection surface and directing the light to said second optical system, and an image pick-up surface (27, figure 3; 17, figure 4) of said image pick-up device is substantially parallel to said detection surface (figures 3 and 4; column 10, line 21-25 and line 51-56).

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16. Regarding claim 11, Metz discloses that the light reflected from said detection surface is reflected from said incident surface, and emitted as the emission light (after reflecting again off said detection surface) through said emission surface (note that the reflection surface 23 or 13 is disposed on the same plane as the incident plane; figures 3 and 4).

17. Regarding claim 12, neither Caulfield nor Metz disclose that the first angle is less than 45 degrees and more than an angle obtained by subtracting an angle of reflection at said detection surface from 90 degrees. It is clear that this limitation depends on the critical angle of the incident light on the prism and would be satisfied depending on the shape of the prism, which could be changed, based on the specifications of the device. The examiner takes Official Notice that building a prism for an irregular pattern reader to have specific dimensions is clearly a design choice. It would have been obvious to one having ordinary skill in the art at the time the invention was made to specify the angular relationships of the prism faces in order to make the system thinner by decreasing the angles of both the incident plane and the emission plane with respect to the detection surface.

18. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield as applied to claim 3 above, and further in view of Matsumura (USPN 5,493,621, previously cited).

19. Regarding claim 6, Caulfield does not disclose that said first optical system includes first incident light turning means for diverting the incident light from said light source so the incident light is incident on said incident surface. Matsumura discloses a fingerprint ID system and method including a light source 103 and a diffuser 102 which causes light to be incident on the

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surface of the prism 101 (Figure 13, 14). Matsumura further discloses that the optical axis of the emitted light is bent by a mirror 104 to provide for increased optical path (column 12, line 58-63). This concept could easily be applied to the incident light optical system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a first incident light turning means (mirror) for diverting the incident light from said light source so the light is incident on said incident surface as taught by Matsumura in order to make the input part more compact by bending the optical axis and providing an increased optical path (column 12, line 61-63).

20. Regarding claim 7, Matsumura discloses an irregular pattern reader including an image pick-up device (CCD 106), wherein said second optical system includes an emission light turning means (mirror 104) for diverting the emission light and forming an image on an image pick-up surface of said image pick-up device (Figure 13; column 12, line 58-67).

21. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield as applied to claim 3 above, and further in view of Higuchi et al. (USPN 5,146,102, previously cited), hereafter Higuchi.

22. Regarding claim 8, Caulfield discloses an image pick-up device (42, 43), wherein said second optical system includes lenses (39), but does not explicitly disclose that the lenses are of different magnifications in vertical and horizontal directions. Higuchi discloses a fingerprint image input apparatus wherein an optical system includes lenses (15) of different magnifications in vertical and horizontal directions (enlargement or reduction; column 8, line 33-52), and said lenses (15) converge the emission light in one of the vertical and horizontal directions and form



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an image on said image pick-up surface (16) of an image pick-up device (column 7, line 26-36; column 10, line 43-44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize lenses of different magnifications in vertical and horizontal directions in said second optical system as taught by Higuchi in order to perform enlargement or reduction of the fingerprint image to attain the desired resolution (column 8, line 46-52).

23. Claims 13, 14, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield in view of Metz as applied to claim 10 above, and further in view of Hebert (USPN 5,596,454).

24. Regarding claim 13, neither Caulfield nor Metz disclose that a region through which a luminous flux in said prism does not pass is omitted from said prism at a surface facing said detection surface. Hebert discloses an uneven surface image transfer apparatus wherein an optical plate 64 is used as an imaging prism with many reflective surfaces of different angles. The device is designed to be as compact and light as possible and the optical plate is shaped such that it better fits into the device and room is made for other components (column 9, line 15-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to omit a region through which luminous flux in said prism does not pass from a plan of said prism facing said detection surface as taught by Hebert in order to lessen the weight of the device or make the device more compact by making room for other components, e.g. the imaging device or the light source (figure 7 and 13).

25. Regarding claim 14, none of the cited references disclose the claimed dimensions of the detection surface having 20 mm in width, 15 mm in length, and said prism having a thickness of

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not more than 10 mm. The examiner takes Official Notice that it is well known that the prism dimensions can be adjusted to the desired length, width, and thickness depending on the desired amount of fingerprint (irregular pattern) information and the intended application. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a prism having the claimed dimensions in order to satisfy a design requirement, or to obtain a thickness as small as possible for use in a portable device as is evident in Metz, which strives to fit the device into a PCMCIA card for use in a portable computer or cellular telephone (column 10, line 57-65).

26. Regarding claim 19, Hebert discloses that a region through which a luminous flux in said prism does not pass is omitted from said prism at a surface facing said detection surface (see above discussion of claim 13), said second optical system and said image pick-up device are respectively located on an electronic substrate (printed circuit board 66', Figure 13; column 10, line 35-50). Each of the elements mounted on said electronic substrate having a thickness of no more than 10 mm and a length of no more than 35 mm, and said detection surface of said prism approximately 20 mm in width and approximately 15 mm in length are all design choices. It would have been obvious to one of ordinary skill in the art at the time the invention was made to omit unused regions from said prism and locate the devices on an electronic substrate having the claimed dimensions as taught by Hebert in order to make the system lighter and to integrate the system into one compact device (column 9, line 14-26).

27. Regarding claim 20, Hebert discloses that said image pick-up device is mounted as a bare chip (Figure 13, element 204) on one of said electronic substrate and said second optical system (column 10, line 46-61).

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28. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield as applied to claim 2 above, and further in view of Hebert.

29. Regarding claim 21, Caulfield does not disclose that said prism includes a convex reflecting surface reflecting to said emission surface light reflected from said detection surface. Hebert discloses a prism (platen 130) having first and second toroidal surfaces (136, 140), which reflect light from said detection surface 86 to said emission surface 138 (Figures 5, 6, 11; column 7, line 25-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a prism having a convex reflecting surface as taught by Hebert in order to reduce or eliminate geometric distortion and astigmatism at the plane of the imaging device (column 7, line 28-39).

30. Regarding claim 22, Hebert discloses that said emission surface forms a lens (Figure 11, element 142; column 5, line 59-65), but does not explicitly disclose that said emission surface is cylindrical. The examiner takes Official Notice that cylindrical lenses are well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the emission surface as a cylindrical lens as taught by Hebert in order to transfer most of the light from the light source to the image sensing device (column 5, line 59-65).

31. Regarding claim 23, Hebert discloses toroidal reflecting surfaces in combination with an aspheric imaging lens 142 (column 7, line 14-17), but does not disclose that a toric lens is mounted on the emission surface. It would have been obvious to one of ordinary skill in the art at the time the invention was made to mount a toric lens on the emission surface in order to reduce or eliminate any geometric distortion or astigmatism in the image that is transferred to the image sensing device (column 7, line 17-24).

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32. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield as applied to claim 2 above, and further in view of Metz in view of Hebert.

33. Regarding claim 24, Caulfield does not disclose that said prism includes two reflection surfaces and the light reflected from said detection surface is reflected a second time from said incident plane and, sequentially, from each of the two reflection surfaces and is emitted through the emission surface. Metz discloses that light reflected from said detection surface is reflected a second time from said incident plane (Figures 3 and 4, note that the incident surface is the same as the emission surface, see above discussion of claim 5). Hebert discloses that said prism includes at least two reflection surfaces (136, 140) and the light reflected from the detection surface is reflected sequentially from each of the two reflection surfaces and is emitted through the emission surface (Figure 11; column 7, line 25-31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to sequentially reflect the light from the detection surface by two reflection surfaces as taught by Hebert in order to reduce or eliminate geometric distortion and astigmatism at the plane of the imaging device (column 7, line 28-39).

34. Regarding claim 25, Hebert discloses that a lens (142) is mounted on the emission surface of said prism (Figure 11; column 7, line 11-24).

35. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield in view of Metz as applied to claim 10 above, and further in view of Matsumura.

36. Regarding claim 15, neither Caulfield nor Metz discloses that said first optical system includes a collimator lens and incident light turning means located between said light source and

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said collimator lens. Matsumura discloses a first optical system including a light source (Figure 13, element 103) located on an electronic substrate (inherent) and a collimator lens (diffuser 102) and an emission light turning means (mirror 104) wherein emission light is incident upon said image pick-up plane (106) from said prism (101) through said emission light turning means (104) and another collimator lens (105; column 12, line 58-67). While Matsumura does not disclose that the light turning means is situated between the light source and the collimator lens, this is an obvious variation in view of the emission light turning means 104. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a first optical system having an incident light turning means located between a light source and a collimator lens as taught by Matsumura in order to make the input part more compact by bending the optical axis with a mirror to provide for an increased optical path (column 12, line 61-63).

37. Regarding claim 16, Matsumura does not explicitly disclose that said light-turning means includes a transparent block and that an emission surface of said light turning means includes a collimator lens. The examiner takes Official Notice that it is well known in the art to use a prism as a light turning means and that a prism and a lens can be integrally formed (Higuchi, Figure 4; column 10, line 48-54; Hebert, collimator lens 128 integrally formed with optical plate 64; column 5, line 44-65).

38. Regarding claim 17, Matsumura does not disclose that said second optical system is located on the image pick-up surface of said image pick-up device. The examiner takes Official Notice that locating a lens and/or a light turning means in close proximity to an image pick-up device is well known in the art, and integrating the systems on the same plane would serve only to make the device more compact. It would have been obvious to one of ordinary skill in the art

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at the time the invention was made to locate the second optical system on said image pick-up plane in order to make the device thinner and more compact and integrated.

39. Regarding claim 18, Matsumura does not explicitly disclose that said light turning means is not more than 10 mm in thickness, but it is a common goal to obtain a thickness as small as possible in a portable device as is evident in Metz, which strives to fit the device into a PCMCIA card for use in a portable computer or cellular telephone (column 10, line 57-65).

### ***Conclusion***

40. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 5,621,516 to Shinzaki et al. discloses an optical device for forming an image of an uneven surface. USPN 3,928,842 to Green et al. discloses a fingerprint comparator including a dove prism (Figure 15).

41. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan J Hesseltine whose telephone number is 703-306-4069.

The examiner can normally be reached on Monday - Friday, 8:30 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703-308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

rjh  
November 30, 2003

  
JINGGEWU  
PRIMARY EXAMINER